



Optimization of Abdominal Surgery and Controlling Intractable Neuropathic Pain with Perioperative OMT

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INTRODUCTION

Perioperative medicine is multidisciplinary, patient-centered care that extends from contemplation of surgery to the recovery process. Osteopathic Manipulative Treatment (OMT) effectiveness in patients with existing chronic neuropathic pain following invasive procedures is not commonly discussed. However, Surgically Induced Neuropathic Pain (SNPP) happens in 20% of patients after hernia repair, and treatment often consists of pharmacotherapy and physical therapy.

Well-known to osteopathic literature describes viscerosomatic reflexes which are involved in pain pathways that propagate and feed forward a continuous neurologically mediated pain response loop: a maladaptive reflex known as segmental facilitation. This positive feedback loop is even more complicated in patients with fibromyalgia. Optimizing visceral structure, circulation, and lymphatics before surgery can help promote wound healing and additionally blunt this reflex arc.

OBJECTIVE

The objective is to demonstrate the effectiveness of utilizing OMT as part of a patient’s perioperative care in a patient with existing chronic neuropathic pain, post-surgical abdominal pain, and intractable migraines. This case study will demonstrate how a focused and multifaceted approach using OMT that is coordinated before surgery, may reduce chronic pain exacerbations and accelerate recovery. The patient’s migraines will be the primary metric to judge OMT effectiveness, as well as the status of his post-surgical incision pain and functionality.

CASE DESCRIPTION

A 37-year-old man with a history of intractable migraines, Arnold Chiari I malformation, fibromyalgia, and multiple previous abdominal surgeries complained of testicular pain, migraines, and global neuropathic pain. His previous left inguinal hernia repair caused him over four weeks of post-surgical abdominal pain and contributed to daily unremitting migraines. The patient had a scheduled right inguinal hernia repair with a plan to undergo OMT perioperatively. His migraines coincide and are directly proportional to his global neuropathic pain which typically extends from his neck to both upper and lower extremities symmetrically.

**Left Inguinal Hernia Repair without OMT:** He was bedbound for two weeks and minimally active for 4 weeks in debilitating pain along with daily flairs of intractable migraine that lasted for all 4 weeks. His migraines at that time lasted for almost the duration of him being awake which is about 15 hours. Intensity ranged from 9-10/10. Also suffered from debilitating incision site pain along with extremity neuropathic pain. He had almost exclusive reliance on caretakers for the duration of his recovery.

**Objective Findings and Neurological Exam**

Brain MRI: Cerebellar tonsillar ectopia to 6 mm below the level of the foramen magnum, suggestive of Chiari I malformation.

Cervical MRI spine: Disc degeneration mild at C3-C7, no frank disc extrusion, central canal stenosis, foraminal stenosis, or intrinsic spinal cord pathology. No definite interval change of volume since June 3, 2021.

CN2-12 intact, no focal weaknesses, no sensory or motor deficits on bilateral upper or lower extremities. Reflexes 2+ Brachial, triceps, patellar, Achilles. Negative Spurling’s. Negative Neer’s, Hawkin’s. Positive cubital Tinel’s test bilaterally.



OSTEOPATHIC MANIPULATIVE TREATMENT

**Key Osteopathic Structural Exam Findings**

**Cranial:** Low vitality, cranial rhythmic impulse <5 amplitude, poor quality of motion, L externally rotated temporal bone, R occipitomastoid suture compression, initially in lateral flux, OAES<sub>L</sub>R<sub>R</sub>, Hypertonic L suboccipital muscles, Right TMJ S-Curve, Right Pterygoid Hypertonicity.

**Cervical:** Cervicothoracic junction restriction involving thoracic duct, Bilateral Distal SCM TP.

**Thoracic:** T2-T6 paraspinal muscle hypertonicity bilaterally, T4FRS<sub>L</sub>; Sternum rightward, counterclockwise and superior fascial drag; Thoracic Inlet rotated right.

**Lumbar/Sacrum:** Sacral restriction in counternutation, Left SI joint restriction, L2FRS<sub>L</sub>

**Abdomen/other:** LLQ Mesenteric Drag of the Ascending colon, Right liver capsular restriction; Celiac Ganglia, Superior mesenteric Ganglia, and Inferior Mesenteric Ganglia +TP; Linea Alba fascial contractions towards midline, and positive chapman’s points along the descending colon.

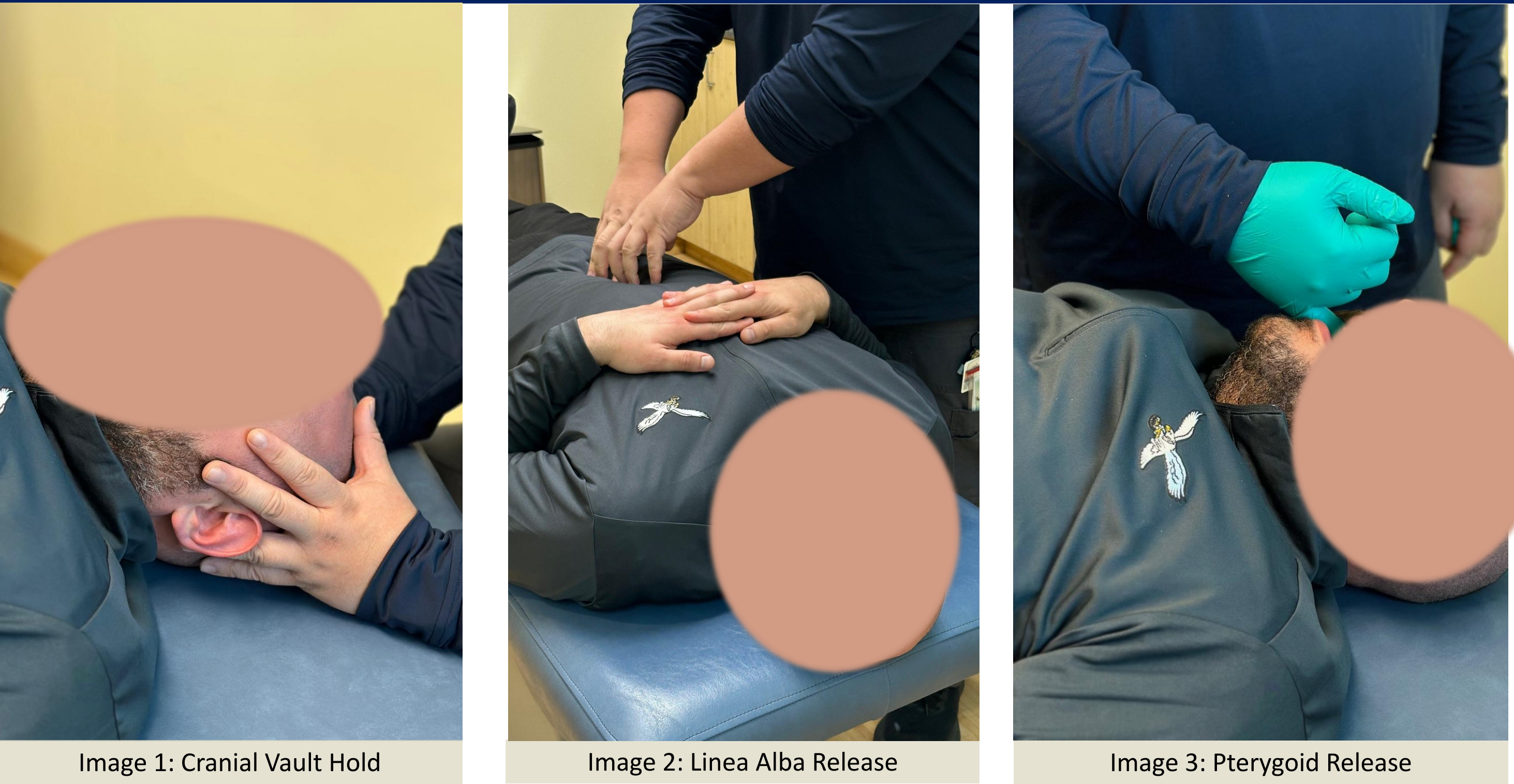
OMT Strategy and Sequence with Select Osteopathic Models’ Approach

Neurologic: Balance autonomic nervous system with OA muscle energy, suboccipital release, and rib raising to address sympathetic chain; optimize sacral motion and relieve dural restrictions. Address neurolymphathic reflex points (Chapman’s). Myodural bridge release.

Respiratory/Circulatory: For optimization of CSF, used cranial and sacral balanced membranous tension, temporal rocking, OM suture decompression. Sacral Rocking, S2 counterstrain and dural restriction. For lymphatics and vascular, open thoracic duct and optimize lymph node fluid flow, most importantly inguinal nodes.

Biomechanical: Address mechanical restrictions in the viscera including adhesions of the mesentery and restrictions around colon and inguinal ligaments. Correct dysfunctions around affected spinal cord levels (T12-L2 is lower GI and GU). Also address TMJD and anterior neck.

\*The patient was treated with OMT at one month and at one week before surgery and then two weeks postop. The treatment protocol began with rebalancing the autonomic nervous system using cranial techniques to reduce hyperalgesia. Once the patient developed an increased tolerance to manual manipulation, the next visit incorporated rebalancing and mobilization of pelvis, sacrum and visceral structures with increased attention to lymphatics the week before surgery.



RESULTS

**Initial Appointment + Begin Perioperative OMT:** Patient is at baseline 8-9/10 in intensity migraine episodes that occur 5+ times per week lasting 12 hours. Patient expressed hyperalgesia with multiple tender points throughout the body. Focused on neurologic model techniques and indirect methods.

**1 Week Pre-op OMT follow up:** Migraines continued at 5+ per week, but duration decreased to 8 hours on average. Intensity of flairs decreased to 7-8/10. Amenable to carefully dosed direct and indirect techniques and biomechanical/circulatory focused techniques along with previous neurologic focused techniques.

**2 Weeks Post-op Right Inguinal Hernia Repair OMT follow up:** Patient reported zero post-procedure abdominal pain and did not end up bedbound. He had 1 week of daily 8-hour migraines at 8/10 in intensity, but after 14 days, episodes decreased to 3 per week and his migraines became non-intractable for the first time.

**5 Weeks Post-op OMT Follow up:** His new migraine and neuropathic pain baseline is 7/10 which he had never achieved before by any other method. Migraines last 6-8 hours now and occur 3 per week. He is now able to use Sumatriptan with higher effectiveness and is phasing out using Butalbital. Later referred to pain psychologist.

DISCUSSION

Reducing this patient’s hyperalgesia through the initial OMT treatments, using a multifaceted approach to the patient’s prophylactic OMT treatment, likely made a significant difference in the outcome of his recovery. His medications included Meloxicam, Gabapentin, Emgality, Sumatriptan, and Butalbital which were not altered in dose or frequency for the duration of this study. This patient’s migraines are often the nidus of his global neuropathic pain and is often triggered by the slightest viscerosomatic irritation. Rebalancing autonomics using cranial and sacral techniques reduced the patient’s hyperalgesia. Lymphatic/circulatory techniques promote wound healing. Treating common headache centers such as the TMJ, masseters muscles, temporal bone, and dural attachments can help with migraines. Visceral techniques help with blood flow, but also relieve mechanical restrictions especially left by previous abdominal surgeries. Altogether, these interventions sever the viscerosomatic reflex arc and retrain the sensorineural fibers to only fire at a higher threshold, in other words, desensitize the innervated structures closer to their physiologic firing threshold. Thus, when noxious stimuli are introduced, such as invasive surgery, the tissue can better resist and tolerate it.

CONCLUSION

This case highlights OMT effectiveness applied before surgery, rather than the common postoperative OMT intervention. Optimizing this patient’s visceral structure, autonomics, and circulation in the perioperative period not only reduced his recovery time but spared him from debilitating pain after inguinal hernia surgery. This case is also an example of how viscerosomatic reflexes play a role in segmental facilitation and how OMT can be utilized prophylactically. It may also serve as an example of how OMT can compliment existing pharmaceutical therapy and increase its potency by addressing the metabolic model of osteopathy. Further studies may elucidate the benefits of coordinating OMT perioperatively to optimize patient recovery with other procedures.

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